APPENDIX I.

Official Laboratory Tests to ascertain the suitability of samples of light caoutchoucine and pyridine for denaturing alcohol.

I. SPECIFICATION OF LIGHT CAOUTCHOUCINE.

1. *Nature.*—By "Caoutchoucine" is meant the liquid obtained by the dry distillation of vulcanised rubber. By "light caoutchoucine" is meant the liquid obtained by redistilling "caoutchoucine" and collecting that portion which passes over at or below about 200° C.

2. *The specific gravity of light caoutchoucine.*—The specific gravity of light caoutchoucine at 60° F should lie between ·835 and ·860 referred to water as 1·000.

3. *Boiling Test.*—For the purposes of this test, 100 c. c. of light caoutchoucine should be redistilled in the pyridine testing flask (see specification for pyridine bases). Under those conditions not more than 15 c. c. of distillate should pass over at or below 100°C. whilst a total (including the foregoing) of at least 70 c. c. should pass over at or below 200° C.

4. *Absence of soluable constituents.*—When 25 c. c. of light caoutchoucine are shaken with a equal volume of water in a stoppered graduated cylinder and due time is allowed for the liquids to separate again into layers, the light caoutchoucine should show no appreciable diminution in volume.

5. *Neutrality.*—The aqueous layer obtained from test 4 should show no marked acidity or alkalinity when tested with both red and blue litmus paper.

6. *Limit of Saturated Hydro-Carbons.*—At least 70 per cent of the light caoutchoucine should be soluble in concentrated sulphuric acid. For testing this, 25 c. c. should be measured off into a tapped and stoppered separating cylinder of suitable capacity and sulphuric acid should be added, at first with great care and in very small quantities. After each addition of acid the cylinder should be shaken and cooled to avovid loss of volatile constituents. Sufficient acid must be used (usually about 50 c. c.) for the high coloured layer to become quite fluid so that it can separate readily from the upper layer of unattacked constituents. After a final thorough shaking and cooling, the cylinder should be left for about three hours to effect complete separation of the two layers and the lower layer be then tapped off. The almost colourless upper layer should be again shaken with strong sulphuric acid until it appears free from soluble constituents (as judged by the colour imparted to the sulphuric acid) and separated as before after standing. It should finally measure not more than 7 c. c. The acid used should be of specific gravity 1·84 and may be of commercial quality.

7. *Freedom from water.*—Light caoutchoucine should not contain any appreciable amount of water. Any officer engaged in drawing samples for test should certify on the bottle that he has drawn the sample from the bottom of the containing vessel where the water, if present, will be found. For this purpose he should employ a syphon tube of which the shorter limb reaches to the floor of the containing vessel. He should also assure himself that the sample is collected in a bottle free of moisture.

II. SPECIFICATION OF PYRIDINE BASES.

1. *Colour.*—The colour must not be darker than that given by two cubic centimetres of decinormal iodine solution dissolved in one litre of distilled water.

2. *Miscibility with water.*—Twenty c. c. of the pyridine bases should give a clear mixture with 40 c. c. of water; or else a mixture only so slightly opalescent that, after standing for five minutes, ordinary newspaper type is clearly visible through a layer 15 c. m. deep.

3. *Amount of water present.*—From 20 c. c. of the pyridine bases mixed with 20 c. c. of caustic soda solution (density 1·4) at least 18·5 c. c. of the bases should separate, after having been repeatedly shaken together and allowed to stand.

4. *Titration.*—Dissolve 1 c. c. of the pyridine bases in 10 c. c. of distilled water. Titrate with normal sulphuric acid until a drop of the mixture gives a definite blue spot on congo red-paper (the blue colour should at once disappear). At least 10 c. c. of the normal sulphuric acid should be required to produce this reaction. (To prepare the congo red paper, desolve one gram of congo red in one litre of distilled water. Soak filter paper in this and then dry).

5. *Cadmium Chloride Reaction.*—Vigorously shake together 10 c. c. of a solution of 1 c. c. of pyridine bases in 100 c. c. of distilled water with 5 c. c. of a 5 per cent solution of dry fused cadmium chloride. A distinct crystalline precipitate should immediately result.

6. *Boiling point.*—Distil 100 c. c. of the pyridine bases in the manner described below. At least 90 per cent should distil over at or under 140° C.

Method.—100 S. C. of pyridine bases are placed in a short necked copper flask of about 200 c. c. capacity. The flask is arranged on an asbestos card which has a circular hole of 30 m. m diameter cut in it. To the flask is attached a fractionating column (consisting of a tube 13 m. m. wide and 170 m. m. long, provided with one bulb) of which the side-tube (issuing 1 c. m. above the bulb) joins a Liebig's condensor of which the cooled part is at least 400 m. m. long. A standard thermometer is placed in the head of the column so that its bulb occupies the centre of the bulb of the column.

The speed of distillation is adjusted to 5 c. c. per minute, the distillate being received in a graduated glass cylinder. At least 90 c. c. should distill over at or under 140° C. at a barometric pressure of 760 m. m.

If the barometer varies from 760 m. m. a correction of 1° C. for each 30 m. m. of variation should be applied (*e. g.* under 770 m. m. of pressure 90 c. c. of distillate should come over at or under 140. 3° C. whilst under 750 m. m. the same amount of distillate should come over at 139. 7° C).

Note.—Pyridine proper is a single definite compound (C. 5 H 5 N) boiling at about 116° C. Pyridine bases are mixtures of pyridine with closely allied compounds boiling at various temperatures. They are cheaper and more effective denaturants than the pure pyridine.

D. S. 1. APPENDIX 2.

License for the sale of denatured spirit.

I, Deputy Commissioner of hereby license you to sell denatured spirit at your shop at during the year ending 30th June 192 , subject to the following conditions to be observed by you.

Conditions.

1. The licensee shall be bound by the rules governing the preparation, possession and sale of denatured spirit as notified by Government from time to time.

2. The license extends only to the sale of denatured spirit, which means spirit which has been rendered effectually unfit for human consumption by the admixture of light caoutchoucine and pyridine bases in accordance with the rules prescribed on the subject.

3. The licensee may procure his supplies of denatured spirit from any Bonded Depot on payment of cost of carriage and price as may be fixed from time to time. He may also obtain his supplies of denatured spirit either by direct importation or by purchase from the holder of a license in Form D. S. I.

4. The quantity possessed at any one time under this license shall not exceed*

Dated, the day of 192 .

Deputy Commissioner.

*(To be filled in by the Deputy Commissioner according to circumstances.)

D. S. 2. APPENDIX 3.

License for possession and use of Denatured Spirit by varnish makers and others.

I, Deputy Commissioner of hereby license you residing at to possess denatured spirit for use in the manufacture of during the year ending 30th June 192 , subject to the following conditions to be observed by you.

1. The licensee shall be bound by the rules governing the preparation, possession and sale of denatured spirit as notified by Government from time to time.

2. The license extends only to the possession and use of and not to the sale of denatured spirits, *i.e.*, spirit rendered effectually unfit for human consumption by the admixture of light caoutchoucine and pyridine bases, in accordance with the rules prescribed on the subject.

3. The licensee may procure his supplies of denatured spirit from any Bonded Depot, on payment of cost of carriage and price as may be fixed from time to time. He may also obtain his supplies of denatured spirit either by direct importation or by purchase from the holder of a license in Form D. S. 2.

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4. The quantity possessed at any one time under the license shall not exceed*

Dated the day of 192 ,

(To be filled in by the Deputy Commissioner according to circumstances.)

Deputy Commissioner.

D. S. 3.

APPENDIX 4.

License for the possession and sale of Methylated spirit by Chemists and others.

I, , Deputy Commissioner of
hereby license you
residing at to possess and sell Methylated spirit during the year ending
30th June 192 subject to the following conditions to be observed by you.

Conditions.

1. The licensee shall be bound by the rules governing the preparation, possession and sale of denatured spirit as notified by the Government from time to time.

2. The license extends only to the possession and use of methylated spirit, *i.e.*, spirit rendered effectually unfit for human consumption by the admixture of wood-naptha in accordance with the rules prescribed on the subject in the preparation of medical compounds for which such spirit is prescribed and to the sale of the same up to a maximum of one reputed quart at a time.

3. The licensee may procure his supplies by importation with the special sanction of the Government in each case or from the Government Central Distillery where methylated spirit specially manufactured are available in quantities not exceeding 20 gallons at a time.

4. The quantity to be possessed at any one time under this license is limited to 25 gallons.

Dated the day of

Deputy Commissioner.

D. S. 4.

APPENDIX 5.

Pass for the $\frac{\text{import or}}{\text{export or}}$ $\frac{\text{import or}}{\text{transport}}$ of $\frac{\text{denatured}}{\text{methylated}}$ spirit.

..... is hereby permitted to $\frac{\text{import}}{\text{export}}$ $\frac{\text{import}}{\text{transport}}$ gallons of $\frac{\text{denatured}}{\text{methylated}}$ spirit from

to Date issuing Officer.

N. B.—This permit shall be in triplicate. One copy shall be retained in the office of issue, one given to the importer, exporter or transporter and the third copy sent in the case of export to the Excise Officer of the District of destination and in the case of issue from the Bonded Depot to the Inspector of the Range to which the spirit is consigned.

D. S. 5.

APPENDIX 6.

Nature of license and number.
Name of licensee.
Station.

Account to be maintained by holders of licenses for the sale or for possession and use of denatured or methylated spirits.

Date	Opening balance	Quantity received	Source of supply	Total quantity in hand and received	Quantity sold to purchasers within the State or used or issued. (Each transaction)	Quantity sold to purchasers outside the State (each transaction)	Name of purchaser	Address of purchaser or name of station to which issued	Total quantity sold, used or issued each day	Remarks
	G. Q.	G. Q.		G. Q.	G. Q.	G. Q.			G. Q.	

Note.—Holders of licenses in Form D. S. 2. need not fill in column 6 to 9.
Do D. S. 3. do 7 and 9.

D. S. 6. APPENDIX 7.

Register of denaturation in the.....Distillery.

Denaturation of materials							Spirits denatured			Remarks
Date	Description	Unit	In hand	Received	Total in hand and received	Used	Vat No.	Quantity	Strength	Here enter whence materials received, number and date of Chemical Examiner's reply, authority for denaturation, etc.
1	2	3	4	5	6	7	8	9	10	11